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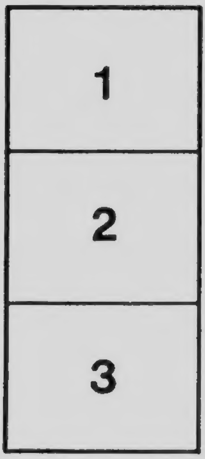

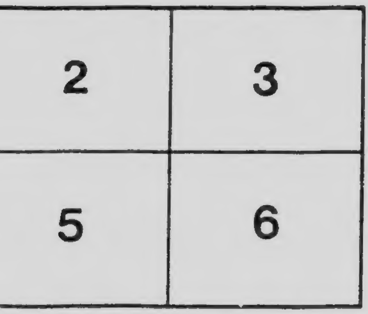

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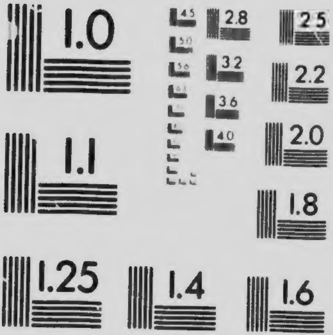

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POTATO GROWING
IN THE MARITIME PROVINCES.

BY

R. D. L. BLIGH, B.S.A.;
Assistant, Nappan, N.S.

The potato, having as its natural habitat the cool, humid, mountainous districts of Chili or Peru, finds somewhat similar conditions in the Maritime Provinces. This fact, together with the insistent and increasing demand for Northen grown seed (which means seed grown under climatic conditions similar to its natural habitat), will mean a new era, namely, lower acreages and very much higher yields instead of the reverse. Hitherto, we have been producing potatoes for consumption both at home and abroad and in both markets demand is for colour rather than variety of potato. But the certified seed potato, which is now very much in demand, calls for potatoes vigorous, productive and free from disease—and bearing a certificate of inspection issued by the Dominion Department of Agriculture testifying as to purity and freedom from disease.

Old, common, unproductive and unpopular varieties will eventually be eliminated, while those remaining will be standardized and production will be increased. Therefore, as the Maritime provinces contain the largest potato areas in Canada, this circular is published for the purpose of creating a more intelligent knowledge of the requirements of this crop among farmers—and especially those of the provinces referred to above—as well as providing suggestions as to how cultural methods may be improved and yield considerably increased.

VARIETIES AND STRAINS OF VARIETIES.

Too much emphasis cannot be laid on the selection of standard varieties suited to market demands and local soil conditions. After years of experimenting with varieties of potatoes, the Experimental Stations are ready to give their results and advice upon request. Growers who act on these, together with some experimenting on their own part, may discover the varieties best suited to their needs. They may go further and secure and test under identical conditions small lots of seed of the chosen varieties from as many different growers as possible and select from these the highest yielding strain for their seed.

Tests have been conducted at the Experimental Station, Kentville, with eight strains of Garnet Chili potatoes, where the yield in 1915 ranged from 36 to 240 bushels, or a difference of 204 bushels per acre. The difference in yield in 1916 from seed stock taken from these same plots ranged from 68 bushels to 212 bushels, or a difference of 144 bushels per acre, while the difference in 1917 yield ranged from 90 bushels to 315, or a difference of 225 bushels per acre.

The varieties that have proven most successful at the Nappan Farm for a number of years are the Irish Cobbler and varieties falling in the Green Mountain group, such as Carman No. 1, Green Mountain, and Wee McGregor. During the last two seasons these have been ousted from their position by newer English varieties such as Davies Warrior, British Queen and Factor, which seem more blight-resistant and better suited to our local conditions than the above mentioned.

SOIL AND ITS PREPARATION.

The potato crop depends on the development of both the root and foliage and, as the latter is dierctly proportional to the former, perfect conditions should be made for a maximum root development. Large crops of potatoes are grown on a variety of soils, but the best is a rich, deep, friable, warm sandy loam, well supplied with decaying vegetable matter, making it retentive of moisture, but supplied with good drainage. The potato crop requires abundant

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DOMINION EXPERIMENTAL FARMS.

E. S. ARCHIBALD, B.A., B.S.A.,
Director.

E. S. HOPKINS, B.S.A.,
Field Husbandman.

(Exhibition Circular No. 100)

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moisture, but will not thrive in cold, water-logged soil. Potatoes should follow sod, preferably clover, which should be manured with ten tons of barnyard manure per acre and ploughed down in the autumn after a good aftermath of clover has started. Autumn ploughing is preferable, owing to a more thorough decomposition of the sod and its resultant availability for the following crop. This practice assures an abundant supply of decaying vegetable matter which, besides increasing the water-holding capacity of the soil supplies, after it has been rendered available by the action of soil bacteria, the fertilizing requirements of the crop. Again, the deep feeding roots of the clover not only loosen up the soil to a greater depth, thus making conditions ideal for the development of perfect shaped potatoes, but also assimilate some of the inert fertilizing ingredients of the sub-soil, which are rendered available for the plant by the decomposition of the clover sod.

Commercial fertilizers should not be applied as a substitute for manure, but should be used as a supplement to it. In such case, the fertilizer applied should be one that is readily available, so that the potato plant may utilize it while the decaying vegetable matter (manure and clover sod), are being rendered available by the soil bacteria.

SEED SELECTION AND TREATMENT.

Every potato grower should practice a thorough method of selection, which should not be confined to the bin in the cellar, but to the growing crop. First, the grower should go over his potato field, carefully selecting sufficient vigorous and disease-free hills to plant an area large enough to supply him with his seed stock. These are harvested and stored separately from the main crop and planted in the spring on an area specially prepared and given thorough attention regarding cultivation, rogueing and controlling of insects and diseases. From this patch the most promising hills are selected and stored separately for the seed plot another year, while the balance are stored for seed used to plant the commercial areas. This ensures seed of the highest quality and productiveness, eliminates diseased and unproductive stock and, if it were more extensively employed, would ensure our average yield per acre being not below 200 bushels as it was in 1920. Experiments have proved the following: First, sprouting in storage decreases both the vitality and yield of the succeeding crop. Second, sets should be of good size with from two to three eyes, a medium sized potato making four sets. Third, planting should be done as soon as possible after cutting, to preserve moisture in the potato. The drying out of the seed for a single day may decrease the yield by one-third. If weather conditions prevent planting, potatoes should be sprinkled with ground plaster or slacked lime to prevent evaporation.

PLANTING.

Potatoes thrive in loose soil; therefore, spring plough. A clover sod that has been manured and ploughed under early the following autumn should be cross-ploughed in the spring and thoroughly worked up to a depth of six inches and either rolled or drag-harrowed just previous to planting. Potato planter should be used (even if owned jointly by several farmers), and planting should be done early—May 25 to June 10—in rows two and one-half-feet apart, with the sets one foot apart in the rows and four or five inches deep, using from twenty to twenty-five bushels of seed per acre. If the uncut seed potatoes are placed in the sunlight for ten days or preferably more, previous to planting, an earlier crop will result.

CULTIVATION.

After planting, the cultivation of the crop is one of the chief factors in production. All previous care, soil preparation, seed selection and planting will be valueless without subsequent, systematic cultivation of this crop. This cultivation should only be carried on until there is danger of injury to the potato crop. Two important factors in this cultivation are control of weeds and soil moisture. An uncultivated soil favours the former and eliminated the latter; therefore, soil should be kept loose with the harrow and cultivator. A system should be followed as under:—

> A few days after the potatoes have been planted and before they are up, but not until the myriad weeds in the soil have had sufficient time to germinate, the soil should be harrowed with a light smoothing harrow, this operation being repeated two or three days later.
>
> As soon as the potato rows can be distinguished, cultivator should be started and should go as near the potatoes as possible without disturbing the earth around them. All further cultivation should be comparatively shallow to prevent injuring the roots and tubers, this being repeated every week or ten days, and after each heavy rain, until the potato tops close the rows.
>
> Just previous to this the potatoes should be hilled or ridged up, immediately after which the cultivator should be run through to loosen the soil left bare by the use of the hiller, as from this bare unmulched surface the loss of soil moisture by evaporation would be enormous. By methods such as these, the yield of potatoes should be augmented one third.

INSECTS AND FUNGOUS DISEASES AND THEIR CONTROL.

Among the numerous insects and diseases of the potato, the most common and injurious are the Colorado Potato Beetle—commonly known as the Potato Bug—and Late Blight. The methods of controlling these may successfully be combined, as follows:—

Apply the following Bordeaux mixture about mid July, or when the young bugs are hatched.

Dissolve four pounds bluestone in four gallons of water. Dissolve four pounds stone or hydrated lime in four gallons water. Fill spray tank with thirty gallons of water and add four gallons of lime solution, stir thoroughly and still stirring add the four gallons of bluestone.

For the control of bugs add to this:—

Dissolved in two gallons of water the following: One and a half pounds of Paris Green. Apply with pressure of from 150 to 200 pounds, covering completely potato tops with spray. Repeat every two weeks until September 15. After bugs are controlled, discontinue use of insecticides.

In brief, these points should be remembered:—

Spray before bugs destroy the tops.
Spray five times. This is essential.
Spray before rainy periods. (Dried spray will not wash off readily).
Spraying increases yield and prevents rot.

Experiments over a period of five years showed that Late Blight reduced the yield 130½ bushels per acre and caused a further loss of 21.3 per cent of the crop in storage from digging time to the following April.

All farmers and market gardeners should make a point of learning to recognize insects injurious to plants and diseases of plants. This information will be given on request.

HARVESTING AND STORAGE.

Potatoes should be harvested during dry weather, so that the earth will fall from the tubers. If not affected by Blight, the potatoes should be dug as soon as the tops die or are killed by frost. Potatoes that have been killed by Late Blight, will finally rot and consequently a crop so diseased should be left in the ground; otherwise, if placed in storage with healthy tubers they will infect the healthy potatoes. An economical asset in harvesting the crop is an up-to-date potato digger.

POINTS IN STORING POTATOES.

Tubers must be quite dry, handled little and not bruised. They should be stored in slatted bins, one bin over the other, to a depth of three feet. Ventilation is important; sunshine must not be allowed. Ventilators should be kept open until the time of heavy frosts. Air must not become dry enough to cause potatoes to shrivel and it may be kept humid by sprinkling the floor with water. Highest temperature, 40°; lowest temperature, 33° F.

COST OF PRODUCTION.

Below is given a table of actual cost of production of a potato crop taken from three quarters of an acre of land under prevailing cost of materials and labour in 1920:—

Rent of land at $15 per acre	$	11 00
Manure, 2[illegible]0 tons at $2. per ton		26 66
Plowing [illegible] per acre		4 00
Harrow[illegible] 5 hours at 60c.		3 00
Seed, 1[illegible]hels at $2.50		37 50
Planting [illegible] hours at 78c.		3 90
Cultivating—5 times—10 hours at 44c.		4 40
Hoeing, 10 hours at 34c.		3 40
Hilling up, 2 hours at 60c.		1 20
Spraying, 5 hours' labour at $1 (5 applications)		5 00
Spraying material:—		
30 lbs. bluestone at 11½c., 3.45; 30 lbs. hydrated lime at $1.75, 53c.; 8 lbs. arsenate of lime at 30c., $2.40		6 38
Cost of Digging and Storing:—		
Four-horse team and driver, 3 hours at 75c.		2 25
Two-horse carts and drivers, 3 hours at 44c.		2 64
Ten pickers, 3 hours at 33c.		9 90
One man storing, 6 hours at 32c.		1 92
		123 15
Less 69 bushels small potatoes at 20c.		13 80
Yield of marketable tubers, 210 bushels		109 35
Cost to produce one bushel marketable potatoes		52

N.B.—An average of 60 gallons of spray per application was applied with power outfit, spraying six rows at a time. This crop was planted and harvested with machinery devoted to these operations.

The Central Experimental Farm, Ottawa, and the Branch Experimental Stations throughout Canada are anxious to render all assistance possible agriculturists in the different provinces with any problems that may arise. Information will be sent on request. Also circulars, pamphlets and booklets. Varieties or strains of varieties will be tested free of charge, while limited quantities of high-producing seed will be distributed to applicants at current prices. Demonstrations of potato machinery devoted to planting, spraying or harvesting, may be arranged for at the Experimental Stations.

Published by authority of HON. S. F. TOLMIE, Minister of Agriculture,
Ottawa, Ontario.